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WE CLAIM:

26. A method of conveying particulate material containing reaction products of a high pressure reactor, from a supply vessel at a pressure of at least two bar to a receiving vessel at a considerably lower pressure, by using an apparatus including a conveyor line attached to the supply vessel and a collecting vessel between the conveyor line and the receiving vessel, wherein the collecting vessel includes a discharge conduit for the carrier gas and means to control the discharge rate of the carrier gas, said method comprising the steps of:

- (a) conveying particulate material from the supply vessel to the collecting vessel pneumatically by using the gas exiting the reactor as a carrier gas, controlling the discharge rate of the carrier gas to control the pressure in the collecting vessel and the flow rate of the particulate material in the conveyor line, and conveying material from the supply vessel to the collecting vessel essentially at the same pressure as is prevailing in the supply vessel;
- (b) reducing pressure of the material collected in the collecting vessel; and
- (c) conveying material from the collecting vessel directly to the receiving vessel essentially at the same pressure as is prevailing in the receiving vessel.

27. A method according to claim 26, further comprising performing step (a) by conveying particulate material as a dense suspension, the flow rate of the carrier gas in the conveyor line being less than 5 m/s and the pressure drop being 0.1 - 1.0 bar.

28. A method according to claim 26, wherein the temperature of the particulate material in the supply vessel is 400 - 1200 °C and further comprising providing the conveyor line with heat exchange surfaces, by which the temperature of the particulate material in step (a) is reduced to less than 300 °C.

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29. A method according to claim 28, further comprising fluidizing the particulate material in the supply vessel by air that is mixed in the carrier gas, thus decreasing the dew point of the carrier gas.

30. A method according to claim 26, further comprising arranging a filter in the discharge conduit for the carrier gas, wherein the means to control the flow rate of the gas includes a control valve downstream from the filter, and discharging in step (a) the carrier gas from the collecting vessel to a space at a pressure which is essentially the same as is prevailing in the receiving vessel.

31. A method according to claim 26, further comprising discharging the carrier gas from the collecting vessel to the receiving vessel in step (a).

32. A method according to claim 31, further comprising providing more than one parallel line for the discharge of the carrier gas between the collecting vessel and the receiving vessel, which lines are provided with a constantly open flow restricting element and a shut-off valve, and performing the control of the discharge velocity by opening and shutting the shut-off valves.

33. A method according to claim 32, wherein the flow restricting elements are easily changeable.

34. A method according to claim 30, wherein the collecting vessel has an elongated form and is arranged in a vertical orientation, and further comprising maintaining a column of particulate material in the collecting vessel, and attaching the discharge conduit for carrier gas to the collecting vessel at the bottom section of the particulate material column.

35. A method according to claim 34, further comprising providing more than one discharge conduit for the carrier gas, the discharge conduits being attached to the collecting vessel at various levels of the particulate material column.

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36. A method according to claim 34, further comprising maintaining the pressure in the bottom section of the particulate material column to be approximately the same as is prevailing in the receiving vessel and practicing step (c) intermittently or continuously from the bottom section of the collecting vessel.

37. A method of conveying particulate material according to claim 26, further comprising disposing a gas tight inlet valve in the conveyor line before the collecting vessel and a gas tight discharge valve between the collecting vessel and the receiving vessel, and practicing steps (a) - (c) in alteration, wherein steps (b) and (c) further comprise the sub-steps of:

(b1) stopping the discharge of the carrier gas from the collecting vessel by using the means to control the carrier gas flow, whereby the conveyance of particulate material is stopped;

(b2) closing the shut-off valve before the collecting vessel;

(b3) allowing the discharge of the carrier gas from the collecting vessel until the pressure in the collecting vessel has dropped approximately to the same level as the pressure of the receiving vessel;

(c1) opening the discharge valve and conveying the particulate material from the collecting vessel to the receiving vessel; and

(c2) closing the discharge valve, opening the inlet valve and returning to step (a).

38. A method according to claim 26, further comprising disposing the collecting vessel above the receiving vessel and, in step (c), allowing the particulate material to fall down to the receiving vessel.

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39. A method according to claim 26, further comprising in step (a), periodically changing the flow rate of the carrier gas by stopping the conveyance for a predetermined period of time at regular intervals or when the pressure in the collecting vessel or the temperature of the material entering the collecting vessel is not within predetermined limits.

40. An apparatus for pneumatically conveying particulate material containing reaction products of a high pressure reactor from a supply vessel at a pressure of at least two bar to a receiving vessel at a considerably lower pressure, said apparatus comprising:

a conveyor line attached to the supply vessel;

a collecting vessel between the conveyor line and the receiving vessel, said collecting vessel comprising (i) a discharge conduit for the carrier gas, (ii) means to control the discharge velocity of the carrier gas from the collecting vessel, and (iii) means to control the pressure of the material collected in the collecting vessel; and

means for conveying the material directly from the collecting vessel to the receiving vessel essentially at the same pressure as is prevailing in the receiving vessel.

41. An apparatus according to claim 40, further comprising heat exchange surfaces disposed in the conveyor line.

42. An apparatus according to claim 41, further comprising disposing elements for fluidizing the particulate material in the supply vessel in such a way that air used for the fluidization is mixed in the carrier gas, thus decreasing the dew point of the carrier gas.

43. An apparatus according to claim 40, further comprising a filter disposed in the discharge conduit for the carrier gas, wherein the means to control the flow rate of the carrier gas includes a control valve arranged downstream from the filter, and the discharge conduit for the carrier gas is in flow communication with the open air.

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44. An apparatus according to claim 40, wherein the discharge conduit for the carrier gas is in flow communication with the receiving vessel.

45. An apparatus according to claim 44, further comprising more than one parallel line for the discharge of the carrier gas provided between the collecting vessel and the receiving vessel, which lines are provided with a constantly open flow restricting element and a shut-off valve.

46. An apparatus according to claim 45, wherein the flow restricting elements are easily changeable.

47. An apparatus according to claim 40, wherein the collecting vessel has an elongated form and is disposed in a vertical orientation, and the discharge conduit for the carrier gas is attached to a bottom section of the collecting vessel.

48. An apparatus according to claim 47, further comprising more than one discharge conduit for the carrier gas, which are attached to the collecting vessel at various levels.

49. An apparatus according to claim 40, further comprising a gas tight valve disposed in the conveyor line before the collecting vessel and between the collecting vessel and the receiving vessel.

50. An apparatus according to claim 40, wherein the collecting vessel is disposed above the receiving vessel and further comprising a valve arranged between the vessels, through which valve the particulate material may fall down to the receiving vessel.

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